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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,570	07/11/2006	Michael Shepshelovich	27312U	4786

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THE NATH LAW GROUP
112 South West Street
Alexandria, VA 22314

EXAMINER

O'HARA, BRIAN M

ART UNIT	PAPER NUMBER
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3644

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/573,570	Applicant(s) SHEPSHELOVICH ET AL.	
	Examiner Brian M. O'Hara	Art Unit 3644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>01/29/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 recites the limitation of "said arrangement being free of additional wings or tail arrangement". However, elements 18, 19, and or 20 as shown in Figures 1A-1D appear to be additional wings or tail arrangements. It is unclear what structure is being excluded from the aircraft arrangement.

3. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what is meant by the phrase "positive pitching moment at zero lift". At zero lift, there would be no pitching moment since the wings would not be providing a longitudinal moment on the aircraft.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. **Claims 1-4, 6-22, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Delanne (US Patent 2,147,968 A) in view of Cox et al. (US Patent 6,626,398 B1).** Delanne discloses an aircraft arrangement comprising a fore wing (1) and an aft wing (2) in tandem close-coupled arrangement (See Fig. 2), wherein said aft wing has side panels (7) and control surfaces (6), and tapered planform with positive sweep (See Fig. 2), said fore wing has non-positive trailing edge sweep (See Fig. 2), the fore and aft wing being disposed at different height (See Figs. 1 and 3), and said arrangement being free of additional wings or tail arrangement. Delanne does not disclose the aircraft arrangement being a micro or mini UAV. Cox et al. teaches an aircraft arrangement which comprises a tandem close-coupled arrangement and is a mini or micro UAV (See Table 1). At the time of invention, it would have been obvious to one of ordinary skill in the art to down size and make autonomous the aircraft arrangement of Delanne in view of the teachings of Cox et al. The motivation for doing so would have been to create an aircraft which can be handled in the battlefield (sizing of Cox et al.) yet has high load carrying capabilities and maneuverability (arrangement of Delanne).

6. With regard to claims 2-4 and 6-7, Delanne discloses: the fore wing having straight trailing edges with negative sweep angle (See Fig. 2); the fore wing having negative sweep (See Fig. 2); a fuselage (3); the fore wing being disposed higher than said aft wing at least by the length of an average aft wing chord (See Fig. 3); and the fore wing and aft wing partially overlap each other (See Fig. 4).

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7. With regard to dependant claims 8-9, Delanne discloses a tandem arrangement wherein: the sum of the planform wing areas of said tandem arrangement is at least 70% of the product of $W \times L$ (See Figs. 4 and 6); the forewing, aft wing and other elements are disposed to provide longitudinal aerodynamic stability (See Column 4, Lines 34-34).

8. Claim 10 is rejected as best understood. At zero lift the aircraft would experience a positive, nose up, pitching moment because of a larger wing planform in the forward position (See Fig. 2).

9. With regard to dependant claims 11 and 12, the fore wing and aft wing have rounded tips (See Fig. 2), at least a portion of the aft wing has negative or positive sweep angle (See element 2 in Fig. 6).

10. With regard to dependant claims 13-15, Delanne discloses the aircraft arrangement wherein: the aft wing (2) has aspect ratio between 2.5 and 4; the fore wing (1) has aspect ratio between 3 and 5; planform areas of the aft wing and the forewing are in ratio between 2:1 and 1:1 (See Fig. 6).

11. With regard to dependant claims 16-19, Delanne discloses an aircraft arrangement wherein: said aft wing has rudder control surfaces (9) on its side panels (7); the fore wing has side panels (8) with rudder control surfaces (7) on its side panels and control surfaces (6).

12. With regard to dependant claim 20, Delanne discloses a tractor propeller (12).

13. With regard to dependant claims 21, 22, and 25, Cox et al. discloses the aircraft arrangement wherein: at least one of said fore wing and aft wing has non-zero dihedral

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angle (See Table 1); the dihedral angles of the fore wing and of the aft wing are such that the vertical distance between wing tips of said fore wing and said aft wing is greater than the vertical distance between their respective wing roots (See Table 1; -10° anhedral forward wing and -10° dihedral rearward wing); and the aft wing has positive angle of incidence and section with positive zero lift pitching moment (See Table 1; angle of attack -2° to $+2^{\circ}$).

14. **Claims 5, and 23, 24, and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Delanne and Cox et al. as applied to claims 1 and 4 above, and further in view of Fraser (US Patent 3,954,231 A).** Delanne and Cox et al. disclose an aircraft arrangement of a self-propelled Mini or Micro UAV as described above. Fraser teaches a tandem wing aircraft configuration wherein: the fore wing is mounted on the upper side of the fuselage on at least one pylon (See pylons in Fig. 4); the fore wing and aft wing have twist (See separate wing sections in the wings of Fig. 11). With regard to claims 27-29, Fraser teaches a fighter type aircraft (See Fig. 6). It is well known to provide longitudinal aerodynamic instability in these types of aircraft to improve maneuverability. Additionally a pusher propeller is shown in Fig. 10. At the time of invention, it would have been obvious to one of ordinary skill in the art to provide the aircraft arrangement of Delanne and Cox et al. as described above with the pylon, wing twist, and stability characteristics of Fraser. The motivation for doing so would have been to meet the flight requirements with respect to maneuverability and range for the UAV.

Response to Arguments

15. Applicant's arguments with respect to claims 1-29 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian M. O'Hara whose telephone number is (571)270-5224. The examiner can normally be reached on Monday thru Friday 10am - 5pm except the first Friday of every Bi-week.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael R. Mansen can be reached on (571)272-6608. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/B. M. O./

Examiner, Art Unit 3644

/Tien Dinh/

Primary Examiner, Art Unit 3644